

One of the objections to the employment of photography as a means of illustrating natural history books is that very frequently the animals are taken in postures which do not display their leading characteristics, and thus render the pictures more or less completely useless for the purpose of specific identification. The same thing applies in the matter of characteristic attitudes and the nature of the habitat; and, in the case of birds, to the form of the nest and the appearance and growth stages of its occupants. To remedy these shortcomings in the case of the feathered denizens of British marshes has been the main object of the authors of the charming little volume standing third in our list. They have set themselves the task of portraying marsh-birds in positions and attitudes which will render the pictures of real service to the scientific ornithologist; and we venture to think that the verdict of their readers will be a pronouncement of unqualified success in this respect. As a specially good example of their work we may cite Miss Turner's photograph of a bearded titmouse, showing the black face-marks of the cock from which the species takes its name. This would not print satisfactorily in the pages of *NATURE*, but we are able to give another illustration showing the bird feeding its young. The book does not, however, depend entirely on its illustrations, and even in such a hackneyed subject as the life-history of British birds, the reader will find much of interest in the brightly written biographies which accompany the plates.

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STUDIES IN NATIONAL DEGENERATION.¹

THE several aspects of study which the statistics deal with in this memoir are chiefly parental and fraternal heredity, the fertility of tuberculous stocks, and the distribution of pulmonary tuberculosis in tubercular families. Prof. Pearson's observations are admittedly, from a numerical standpoint, wholly insufficient, but if his deductions are thereby rendered inconclusive, he has pointed the way and laid the foundation for further study of an all-important subject.

Prof. Pearson discusses only pulmonary tuberculosis, that is, phthisis, or, as it is popularly termed, consumption; yet even with this limitation it is uncomfortable reading that about 10 per cent. of the inhabitants of the British Isles are affected by pulmonary tuberculosis. Unfortunately, other organs besides the lungs become the seat of tuberculosis, and their disorganisation is attended by as serious results as when the lungs alone are considered. It may be that tuberculosis of the lung is, from the point of possible national deterioration, not the most deadly form of the ailment. Tubercular diseases of the bones of the joints, of the lymphatic system, and of several of the organs other than the lungs, prevail to an extent little appreciated as being of an equally deadly nature, with the more evident lesions in the lungs. They all indicate a diathesis, and give rise to types of infirmities well known to medical men. These evils of tuberculosis, therefore, are much more widely spread than pulmonary tuberculosis or consumption would give us to understand, and being less manifest to the public scrutiny are more insidious and more apt to be neglected in the reckoning of tuberculous disease generally.

That heredity plays an important part in tuberculous disease is, in Prof. Pearson's opinion, un-

doubted. Recent beliefs point rather to infection as being the major element in rendering the disease so prevalent, and it is noteworthy that Prof. Pearson inclines to the older belief of heredity. He finds that tubercular lung trouble is chiefly prevalent amongst those who inherit a predisposition, that is, a phthisical or consumptive diathesis. It is impossible, however, owing to insufficient data, to assume that the tendency to any disease is inherited in the same sense as are physical and mental characteristics, but did inheritance not explain the matter it is difficult to understand how anyone escapes the disease, seeing that, in urban districts especially, the tubercle germ is so prevalent that "few individuals who lead a moderately active life can escape an almost daily risk of infection."

Such being the case, the tubercle germ can thrive best in the suitable soil to be met with in lung tissues which are prepared by hereditary predisposition, or, in some cases, by what may be termed accidentally acquired predisposition in the lung tissues themselves, by previous local lesions. That the predisposition to the lung becoming the seat of tuberculous disease is to be statistically ranged alongside well-established inherited characteristics, such as physical and mental traits are known to be, can only be proved by obtaining complete histories of multitudes of families and family stocks. This, however, is at present a long way off being established, and until this gap is filled any deductions we make at present can only be speculative for the most part.

The period of life during which tuberculosis is most likely to show itself in the lungs is between the ages of twenty and thirty. The mean age of onset in men is set down at the twenty-ninth year, and in women at the twenty-fifth year. The actual danger zone cannot, however, he said to be passed until the fortieth year, or perhaps the forty-third year, is passed.

The observation that there is but an insignificant difference between the time of onset of the disease when some member of the household is the subject of tuberculosis and when no member is thus afflicted is rather against the infection theory pure and simple; for with the constant possibility of infection in the immediate environment, phthisis should, according to infection beliefs, appear at an earlier age than statistics seem to show.

After discussing the part played by parental and fraternal heredity, Prof. Pearson concludes that the tuberculous diathesis is inherited in the same way and with the same intensity as the physical characters are inherited in man.

Concerning the fertility of tuberculous stocks, Prof. Pearson shows that the pathological conditions do not tend to reduce fertility, but, on the other hand, that such stocks appear to be quite as fertile, and in all probability are more fertile, than normal stocks of the same class in the community at large. The fact, however, that tuberculosis is a disease of youth and early middle life distinctly lowers the marriage rate and limits the child-bearing period of such stocks, and thus reduces the total number of offspring born to tuberculous people; there can be no doubt that by the inbreeding of purely tuberculous persons the stock would become in time extinct.

The question of order of birth, that is, whether the child belongs to the early or late portion of a given tuberculous family, is of considerable interest. Are the elder or the younger members of the family the more liable to develop tuberculosis and to possess a tuberculous diathesis? The children of old people, of, say, a man over sixty and a woman of forty-seven, are popularly believed to be handicapped in the struggle for life owing to inherited physical defects. There is no

¹ Drapers' Company Research Memoirs, II. A First Study of the Statistics of Pulmonary Tuberculosis. By Prof. Karl Pearson, F.R.S. Pp. 26. (London: Dulau and Co., 1907.) Price 3s.

real evidence that this is the case, as many instances for and against the contention can be given. Whether the child of elderly parents is healthy or not depends not so much upon the age as upon the health of the parents; for a man with, say, Bright's disease—the prevalent ailment of men over sixty—will certainly not beget a healthy offspring. It would seem, however, from a general study of constitutional defects which are inherited, that the elder members of the family are more liable to suffer than the younger. In the case of tuberculous families, as well as with stocks giving no parental tuberculous history, the elder offspring, especially the first and second, appear subject to tuberculosis at a very much higher rate than the younger members.

This observation is of especial interest when the modern notion of the limitation of families is considered. There are few "younger members" to the small and limited families of to-day. The two or three children born to a couple of parents would represent the elder branches only of the "old-fashioned family" of a dozen of some fifty years ago. We have just seen that Prof. Pearson declares that the first and second child are endowed with all forms of pathological heritage, and if there are only two children in the family, the limited family of the present day is producing a community of persons highly endowed with a pathological heritage, uncorrected in its national deteriorating effect had there been later children of the marriage—that is, children less likely to have inherited in a marked manner the pathological tissues or diathesis of their parents.

If we are to believe the above statement, and there is no evidence against its being logically acceptable, we are brought face to face with the question of the benefit or otherwise of the law of primogeniture which so largely obtains all the world over. From a racial standpoint the first and second children, as we have seen above, are the worst members of the family to beget a stock free from pathological taints; yet it is to the eldest son that the preservation of the family, and its possessions, its titles, or its wealth, is entrusted. To push this point to its seemingly logical conclusion, it would come about that the eldest son of one family marrying the eldest daughter of another family would in time lead to an effete progeny and the extinction of the power of rearing children. As a prophylactic agency in this scheme of pathologic inheritance, it would appear essential, to correct the deteriorating effects of intermarriage between elder members of different families, that the eldest child of one family should marry with a younger child of another family.

The limitation of families to one or two children is therefore a highly detrimental factor in national eugenics, for not only is there no allowance for what appears to be the inevitable waste attaching to child life, but the progeny, if thus produced only during the early years of married life, is calculated to add in time more affected individuals to the community, seeing it is the first-born children especially that inherit family traits of physique and diathesis.

The predominance of race depends on the preservation of the mentally and physically fitter stocks. In the struggle for existence amongst primitive peoples this is "naturally" provided for by the exigencies of life, but amongst a highly civilised race, such as our own, the fitter stocks appear likely to be weakened "by the lessened intensity of the intraracial struggle and the differential limitation of the family."

It is scarcely necessary to state that Prof. Pearson has handled this subject, as he handles all the problems he deals with, in a manner at once logical, unbiased and rigidly scientific. We are willing to

accept Prof. Pearson's conclusions from the basis he starts from; but until the basis is widened a hundred fold it would be rash to formulate definite and incontrovertible deductions in regard to the effects of the inheritance of any pathologic diathesis for any given ailment.

SIR RICHARD STRACHEY, G.C.S.I., F.R.S.

ON Wednesday, February 12, there passed away, at the advanced age of upwards of ninety years, a distinguished son of a distinguished Anglo-Indian family, Lieutenant-General Sir Richard Strachey, R.E., G.C.S.I., LL.D., F.R.S. To give any adequate impression of a career which extended from 1836, when Richard Strachey left Addiscombe to join the corps of engineers of the East India Company, to 1907, when he retired from the chairmanship of the East Indian Railway Company, would be in any case a difficult task, and when, as in this case, a life of nearly ninety-one years is more remarkable for the versatile activity of the spirit that animated it than for its length the task becomes insuperable.

He was elected a Fellow of the Royal Society in 1854 for scientific work in botany, geology and physical geography, carried out while he was stationed at Nani Tal, in the Kumaon Himalayas, whither he was transferred from engineering work in connection with the Ganges canal on account of repeated attacks of fever. In 1897, the year in which he was appointed Knight Grand Commander of the Star of India, a Royal medal was conferred upon him for his investigations in physical and botanical geography and meteorology. "Two of the most recent of these," quoting from the award, "are recorded in his report, published in 1888, on the barometrical disturbances and sounds produced by the eruption of Krakatoa and in his paper in the *Phil. Trans.* of 1893, entitled 'Harmonic Analysis of Hourly Observations of the Temperature and Pressure at British Observatories.' These, while important in themselves, are but the last of a long series of valuable memoirs. He was the first to treat scientifically the physical and botanical geography, geology, and meteorology of the Western Himalaya and Tibet. He also first observed the occurrence of a regular series of fossiliferous rocks, from the Silurian upwards to the north of the great snowy axis of the Himalaya. His numerous papers on these subjects, dating from the year 1847, are published in the Journals of the Royal Asiatic, Geological, and Royal Geographical Societies' Proceedings, and in the reports of the British Association."

In 1873 he had returned home and was appointed a member of the meteorological committee of the Royal Society which controlled the Meteorological Office, established in 1867; he was a member of Sir William Stirling Maxwell's committee which revised the constitution of the governing body of the office, and was a member of the council which replaced the committee in 1876. After a further period of absence in India on special duty, he resumed his place on the council; in 1883, upon the death of Prof. H. J. S. Smith, he was appointed chairman and filled the office for twenty-two years. He was president of the Royal Geographical Society from 1887 to 1889. He received the Symons medal of the Royal Meteorological Society in 1906.

His scientific activity, although closely interwoven with the rest of his work, was only a part of his life. He won distinction as an engineer in the conduct of irrigation works and as a soldier in the Sutlej campaign. His greatest claim to remembrance is based upon his achievements as head of the Indian Public